

FMT DRV V1.1

High Power Laser Diode Driver

User Manual

Thank you for purchasing the **fmt driver. V1.1**. This is a boost/buck constant current output laser diode driver.

The driver comes with input and output leads attached. See picture for the correct way of connecting before using.

Specs:

Max. output current which has been tested[boost mode] = **2.1A at 4.5V at the output and 3.6V input**

Max. output current which has been tested[buck mode] = **2.4A at 4.5V at the output and 5.5V input**

Max. output voltage = 5.5V (6V possible but you are pushing the IC's limits)

Input voltage = 3.0 to 5.5V (6V possible but you are pushing the IC's limits)

Cutoff voltage = **2.7V (2.9V for V1)**

PCB Size = 16mm diameter (2 holes for input wires to go through the heatsink/pill)

Overvoltage protection

Low battery cutoff protection

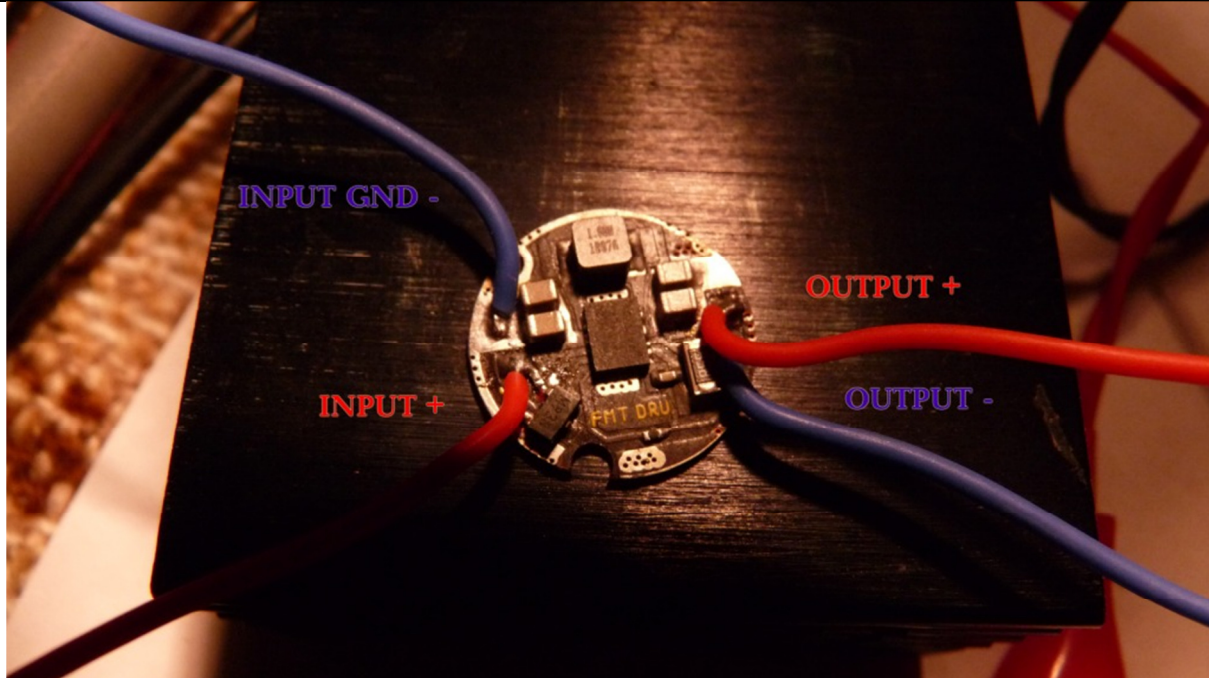
Load disconnected protection

Over temperature protection

If using a battery as power source – You must use:

- **Good quality high capacity (2800mAh or better) 3.7 Li-Ion battery** for full range of output currents.
- **A123 3.6 LiFePo4 High Discharge battery** for low to mid-range of output currents.
- **3x1.2V Ni-MH high capacity batteries** for lower output currents.

Driver's bottom pad is connected to the **Input negative (GND)** and must be used as a heatsink base. Apply a thin layer of thermal paste/thermal silicone and attach it to aluminum/copper heatsink for cooling.



Be sure to discharge the output capacitors of the driver before connecting the laser diode to the corresponding output leads.

Use a resistor across them or put a resistor at the output leads for a few seconds.... avoid short circuiting the capacitors with tweezers!

!!!! IMPORTANT:

Input ground and Output Ground are not continuous! Do not use with case positive or case negative diodes unless they are isolated from the host body and power source ground!!

Output current is preset at the time of purchase and should be tampered with only by an experienced user with good soldering skills.



The green mark shows the two soldering pads for the sense resistor. 1206 size package resistors are recommended. For higher currents above 1A, I recommend two resistors stacked in parallel. You can use a single 1206 package resistor for currents below 1A. Maximum current that has been tested is 2.1A at 4.5V[boost] and 2.4A[buck] output. Going further is not guaranteed to work except for a 3.3V output. **If you decide to change the resistors do that at your own risk.**

Note: a possible R22ohm [1210package] resistor can fit (tested) to deliver 2.1A in boost mode.

Output current is calculated by the following formula.

$$I = 0.5/R$$

Be sure to use a test load before putting the driver into your final project.

Battery cut off voltage is set to 2.9V and operation of the driver will stop when your battery's voltage drops to that point, preventing your battery from over discharge.

You may notice a distinct high frequency sound coming from the driver when the battery voltage drops below the point it can deliver enough juice to the driver for a fully regulated output. This doesn't affect the performance of the driver in anyway. It's just the sound. Note that older people have the tendency to lose the ability to hear some of the high frequencies... So some of you might not hear it. My parents are a perfect example of that :D :cheers:

Disclaimer:

The **fmtdrv.** is assembled and tested prior to shipping. I don't take responsibility for improper handling, reverse polarity, not heatsinking, short-circuiting, operating the driver outside it's specs, tampering with the Rset resistors or any other components, or any other USER fault causing damage to the driver or your device! Before using the driver in your final project - always use a test/dummy load for testing!

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